# Images formed by mirrors

Images are formed:

a) where rays of light intersect (**real image**)

b) where rays of light seem to originate (**virtual image**).

In a **real image**, light actually intersects or passes through the image point.
In a **virtual image**, light does **not** actually pass through the image point. Instead, the light seems to originate from that point.

**Image distance q**:
distance of the image from the mirror.
**Object distance p**:
distance of the object from the mirror.

Image height **h'**
Object height **h**
Magnification **M**=**h'**/**h**

# Images formed by flat mirrors:

1. The magnification **M**=**h'**/**h** is one.
   (image height **h'** = object height **h**)
2. The image is virtual.
3. The image is erect (not inverted).
   Left and right are reversed, but not up and down.
4. The image distance **q** equals the object distance **p**.
5. The image can be found by **ray tracing**.
6. There may be multiple images for a single object, if there is more than one mirror.

**Figure 26.1 (Serway)**

**Figure 26.2 (Serway)**

# Ray Tracing:

1. Draw one line in the principal axis (reflected backwards).
2. Draw one line from the tip of the object parallel to the principal axis (PQ reflected backwards).
3. Draw one line from the tip of the object intersecting the principal axis at the mirror (PR is reflected by angle $\theta$).

4. The tail of the image will be on the principal axis.
5. The tip of the image will be given by the two rays originating from the tip of the object.

Fig. 26.2 (Serway)